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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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09/881,167

06/14/2001

Richard A. Skogman

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02/28/2003

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EXAMINER

AL NAZER, LEITH A

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 02/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/881,167

Applicant(s)

SKOGMAN, RICHARD A.

Examiner

Leith A Al-Nazer

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 and 28-32 is/are allowed.
- 6) ☒ Claim(s) 15-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other:

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-14 and 28-32 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

The prior art fails to teach all the limitations taught in independent claims 1, 28, and 32. U.S. Patent No. 5,283,447 to Olbright et al discloses a similar system to that of the present application. However, independent claims 1, 28, and 32 teach an implantation region bordering an aperture area, while Olbright shows implantation regions impinging upon the aperture area.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 15-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites a "laser area". However, no elements are provided to properly conform the laser area. Furthermore, claim 15 omits essential elements which are necessary for the operation of the laser. The omitted elements are: a bottom semiconductor DBR stack and a top semiconductor DBR stack.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 15-19 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Olbright et al '447.

With respect to claim 15, Olbright shows a laser comprising a substrate comprising epitaxial layers and an aperture area (Figure 3; Column 4, Lines 55-65), a dielectric mirror formed on top of the aperture area (Column 3, Lines 10-20), an implanted region (343') within the substrate (Figure 11), the implanted region bordering the aperture area.

With respect to claim 16, Olbright shows the epitaxial layers comprising a bottom semiconductor DBR stack (345 of Figure 11), an active region (343 of Figure 11), and a top semiconductor DBR stack (341 of Figure 11).

With respect to claim 17, Olbright teaches the top semiconductor DBR stack containing a material chosen from the group consisting of aluminum, gallium, arsenic, indium, phosphorus, and a combination thereof (Column 4, Lines 1-10).

With respect to claim 18, Olbright teaches alternating pairs of aluminum gallium layers (Column 4, Lines 1-10).

With respect to claim 19, Olbright teaches the top semiconductor DBR stack being doped (Column 4, Lines 1-10).

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With respect to claim 27, Olbright teaches the device as a vertical cavity surface-emitting laser (Column 2, Lines 3-10).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olbright et al '447 in view of Floyd.

With respect to claims 20-23, Floyd teaches a top semiconductor DBR stack having forty individual layers or less, twenty individual layers or less, eleven individual layers or less, and seven individual layers or less (Column 5, Lines 7-15). Olbright and Floyd are analogous art because they are from a similar problem solving area: semiconductor laser structures. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to

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combine the top semiconductor DBR stack taught by Floyd with the laser structure taught by Olbright. The motivation for doing so would have been to reduce the resistance of the top semiconductor DBR mirror. Therefore, it would have been obvious to combine Floyd with Olbright to obtain the invention as specified in claims 20-23.

With respect to claims 24-26, Floyd teaches a dielectric mirror containing material chosen from the group consisting of silicon dioxide, titanium dioxide, silicon nitride, and combinations thereof (Column 5, Lines 7-15). Olbright and Floyd are analogous art because they are from a similar problem solving area: semiconductor laser structures. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the materials taught by Floyd with the laser structure taught by Olbright. The motivation for doing so would have been to provide a top semiconductor DBR stack with less resistance. Therefore, it would have been obvious to combine Floyd with Olbright to obtain the invention as specified in claims 24-26.

Communication Information

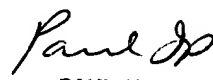
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A Al-Nazer whose telephone number is 703-305-2717. The examiner can normally be reached on Monday-Friday 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3329.

LA
February 21, 2003


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